

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The various means plus function clauses in claims 1,4,5,11-13 are considered to meet the requirements under 35 U.S.C. 112, 6th paragraph. However, the instant Specification does not provide or suggest the metes and bounds of the individual means plus function clauses, or describe specific structural components. There is no description in the Specification of what specific apparatus are encompassed by "means for moving", "means for performing pretreatment procedures" (especially plural such means), "means for controlling...", "means for sensing...". The Specification also does not identify what "chemical characteristics" would refer to other than "pH ...and the like".

ARGUMENTS CONCERNING DOUBLE PATENTING REJECTIONS PERSUASIVE

The Arguments concerning obviousness double patenting, especially in view of claim amendments concerning slurry pretreatment, means for adjusting polymers, and introduction of gases into the pressure filtration apparatus are persuasive.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 3-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benesi patent 6,159,359 in view of Benesi patent 5,462,677 and Thogho et al patent 5,382,356, and also in view of Conley et al patent 3,393,149 and Aigeldinger et al patent 5,558,773.

Benesi '359 discloses method and apparatus employing a pressure filter apparatus 26 comprising upper plates 44, lower plates 45 having cavities, filter media (column 4, line 61), the filter adapted to seal and pressurize (column 1, lines 50-59), plates being movable (column 1, lines 55-59), media moving means (column 6, lines 48-54), means to introduce fluids into the pressure chamber (column 7, lines 5-9), means to drain or withdraw fluids from the filtering chamber that have passed through the filter media and lower plate (column 6, lines 12-16; also see column 4, lines 32-34 and column 5, lines 60-63), slurry sources 50 and means to sense pressure in the chamber (column 7, lines 10-14). Also disclosed are controller means to control pretreatment, plate opening/closing, filter media movement and introduction of fluids (column 5, lines 23-33). Benesi '359 additionally disclose introduction of gases and other

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wash fluids through the filter, in between processing of batches of slurry (column 3, lines 44-55), sealing of the plates or platens to form internal cavities (column 1, lines 55-65), retaining of a filter cake (column 2, lines 28-30, etc.).

The claims firstly differ in requiring a plurality of pretreatment means, and separate means to add pH or chemical characteristic-adjusting additives, coagulant materials and polymeric materials to the slurry, responsive to means for monitoring pH, temperature, viscosity, or other chemical characteristics. However, to have modified the apparatus of '359 by providing such pretreatment means would have been obvious and not have constituted an inventive step, since Benesi '677 teaches at column 8, lines 16-45 to include chemical addition pretreatments upstream of similar filter press to '677 in order to more efficiently dewater the sludge; and since, Thogho et al teach at column 3, lines 3-21 to have pretreatment with coagulants and other conditioners to reduce the water content of slurry being dewatered prior to introduction into a belt filter press (column 5, lines 50-55) and minimize capillary suction. The material conditioning additions in Thogho are responsive to measurement of pH, temperature, viscosity, or other chemical characteristics (column 7, line 49-column 8, line 29 and column 11, lines 35-65). Such materials may comprise various polymers (column 5, lines 32-44). Additionally, Conley treats wastewater or industrial slurry in pressure filters (column 5, lines 20-26 and column 7, lines 33-36), and precedes filtration by monitoring pH, and turbidity by at least one treatment means (column 3, lines 14-20) and by multiple steps of separately adding pH-adjusting reagents, and inorganic coagulants, or flocculants, at separate stages (column 3, lines 22-28 and column 4, line 50-column 5, line 32; also note column 7, lines 35-37).

The claims thusly differ in requiring means for analyzing characteristics of the slurry, including at least pH, temperature and viscosity. Thogho teaches such slurry analysis means (column , lines 28-45; column 5, lines 56-60, column 11, lines 35-65 etc.), in combination with means for adding coagulant in controlled amounts to the filter press, so as to result in formation of a consolidated filter cake that is readily removed from the filter.

In summary, it would have been obvious to the skilled artisan in the filtration endeavors, to have augmented the Benesi filtration system, with the controlled coagulant and other chemical material additions, in stages, employing each of pH adjustment, and inorganic and polymer additions and accompanying slurry analyzing means of Thogho and Conley , so as to optimize formation of filter cake, optimize the desired rate and extent of dewatering and thus optimize solids or filter cake separation from the fluids and filtrate (summarized at column 3, lines 22-35).

The claims also differ in requiring means to sense temperature and pressure in the pressurized filtration chamber. Benesi '359 already sensing pressure in such chamber (column 7). However, to have modified the '359 apparatus by providing such temperature sensing would not have constituted an inventive step, since '677 at column 6, lines 14-19, teaches to sense and control chamber temperature to optimize the effect of the pretreatment chemicals. However, Aigeldinger et al teaches to dewater either industrial or sewage sludge slurry in pressurized filtration apparatus that treats and produces batches of filter cake (column 1, lines 10-14 and 45-55 and column 2, lines 22-35). Aigeldinger teaches to control temperatures and pressures in the filtration chambers by monitoring various parameters, including pressures and temperatures inside the filtration chamber (column 6, lines 1-13), especially column 6, lines 5-

7). It would have been obvious to the skilled artisan to have also so monitored and controlled temperatures and pressures inside the filtration pressure chamber to control the degree of drying of the filter cake.

For claim 3, '359 teaches at column 7, lines 5-9 to add material to the closed press filter.

For claim 4, '359 discloses feedback means at column 7, lines 39-48.

For claim 5, cake formation control is disclosed by '359 at column 7, lines 8-9 and 44-48.

For claim 6, '359 adds pressurized fluids at column 7, line 6.

For claims 7 and 8, see discussion of steam or compressed gas at column 7, lines 22-24.

For claims 9 and 10 '359 discloses pressure reduction means at column 7, lines 38-39.

For claim 11, recycling and conservation of heat is conventional in most slurry treatment industries.

For claim 12, '677 suggest slurry recycle at column 1, lines 34-37, etc.

For claim 13, the spray heads 67 of '677 are effective to promote mixing.

For claims 14 and 15, although the specific fluids/chemicals are not shown by the For claims 16, 17 and 19, '359 teaches programming and feedback aspects of a controller at column 7, lines 39-48, and introduction of steam or compressed gas at column 7, lines 22-24.

For claim 20, Thogho et al disclose temperature control of the slurry feed, hence inherently of slurry in the pressure filter downstream, at column 6, lines 16-19.

For claim 21, see discussion of diaphragms being known in pressure filters at column 3, lines 38-43.

For claim 18, heat recycling is conventional with most industrial processes for purposes

of energy conservation, these claims do not introduce any structure into the apparatus.

Applicant's arguments filed on 7/27/2009 have been fully considered but they are not persuasive, and are somewhat moot in view of expanded grounds or rejection, in part necessitated by claim amendments. It is argued that the teachings of Thogho are not applicable to modification of method and apparatus employed by the Benesi patents, since Thogho does not suggest the process employed in a system using pressure filter. However, figure 1 and column 5, lines 27-31 and 49-68 explicitly teach the introduction of coagulant materials to process sewage or industrial sludge/slurry prior to introducing it to any of several types of pressure filters. Similarly, Conley adds pH adjusting materials and coagulants in plural stages to sewage sludge or slurry prior to dewatering in filters that may be in pressure chambers.

Again note, that the previously applied Double Patenting rejections have been dropped.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at his direct government telephone number of 571-272-1140. The examiner can normally be reached on Monday-Friday from approximately 8:30 AM to 12:30 PM and 2:00 PM to 6:00 PM.

Additionally, the examiner's supervisor, Duane Smith, of Technology Center Unit 1797, can be reached at 571-272-1166.

The formal facsimile phone number, for official, formal communications, for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD
10/21/2009
/Joseph W. Drodge/
Primary Examiner, Art Unit 1797